blast ("HSF") cells (CRL #1885, passage 4, obtained from American Tissue Type Culture Collection, Rockville, Md.). Two hundred fifty (250) microliters of the resulting cell-containing tetra-amino PEG/tetra SE-PEG (PEG-PEG) solution was dispensed into each of two wells on a 48-well culture plate and allowed to gel for approximately 5 minutes at room temperature. One (1) milliter of Dulbecco Modified Eagle's Media (supplemented with 10% fetal bovine serum, L-glutamine, penicillin-streptomycin, and non-essential amino acids) was added to each of the two wells. The concentration of cells was approximately 3×10^5 cells per milliliter of tetra-amino PEG/tetra SE-PEG solution, or 7.5×10^5 cells per well.

To prepare a control, a pellet of HSF cells were suspended in 1.2 ml of complete media. Two hundred fifty (250) microliters of the control mixture was dispensed into each of three wells on the same 48-well culture plate as used above. Each well was estimated to contain approximately 7.5×10^5 cells. Each well was given fresh media every other day.

Initially, the cell-containing tetra-amino PEG/tetra SE-PEG gels were clear and the cells were found to be densely populated and spheroidal in morphology, indicating that there was little adhesion between the cells and the PEG/PEG gel (the cells would normally assume a flattened, spindle-shaped morphology when adhered to a substrate, such as to the treated plastic of the tissue culture plates). After three 3 days incubation at 37° C., the media in the wells containing the PEG/PEG gels was found to have lightened in color (Dulbecco Modified Eagle's Media is normally red in color), indicating a pH change in the media. This indicated that the cells were alive and feeding. At 7 days incubation at 37° C., the cells were still spheroidal in morphology (indicating lack of adhesion to the gel) and the media had lightened even further, indicating that the cells were still viable and continued to feed.

On day 7, the contents of each well were placed in a 10% formalin solution for histological evaluation. According to histological evaluation, an estimated 75% of the cells in the wells containing the PEG/PEG gels appeared to be alive, but did not appear to be reproducing.

The results of the experiment indicate that HSF cells are viable in the tetra-amino PEG/tetra SE-PEG crosslinked gels, but did not seem to adhere to the gel and did not appear to reproduce while entrapped within the gel matrix. As described above, adherence or non-adherence of cells to a substrate material can influence the cells' morphology. In certain types of cells, cellular morphology can, in turn, influence certain cellular functions. Therefore, non-adherence of the cells to the PEG-PEG gel matrix may be an advantage in the delivery of particular cell types whose function is influenced by cell morphology. For example, the ability of cartilage cells to produce extracellular matrix materials is influenced by cellular morphology: when the cells are in the flattened, spindle-shaped configuration, the cells are in reproductive mode; when the cells are in the spheroidal configuration, reproduction stops, and the cells begin to produce extracellular matrix components.

Because the PEG-PEG gels are not readily degraded in vivo, the gels may be particularly useful in cell delivery applications where it is desirable that the cells remain entrapped within the matrix for extended periods of time.

What is claimed is:

1. A composition comprising a multi-nucleophilic polyalkylene oxide having m nucleophilic groups, a multi-electrophilic polyalkylene oxide having n electrophilic groups, and a biologically active agent, wherein m and n are each greater than or equal to two, and wherein m+n is greater than or equal to 5.

2. The composition of claim **1**, wherein the biologically active agent is selected from the group consisting of: enzymes, receptor antagonists, receptor agonists, hormones, growth factors, autogeneous bone marrow, antibiotics, antimicrobial agents, antibodies, cells and genes.

3. The composition of claim **1**, wherein the biologically active agent is a growth factor or a derivative, analog or fragment thereof.

4. The composition of claim **3**, wherein the growth factor is selected from the group consisting of transforming growth factor, fibroblast growth factor, platelet derived growth factor, epidermal growth factor, connective tissue activated peptides and osteogenic factors.

5. The composition of claim **3**, wherein the growth factor is a member of the transforming growth factor supergene family.

6. The composition of claim **5**, wherein the growth factor is selected from the group consisting of a beta transforming growth factor, a bone morphogenic protein, a heparin-binding growth factor, a platelet-derived growth factor, an insulin-like growth factor, an inhibin, a growth differentiating factor and an activin.

7. The composition of claim **3**, wherein the growth factor is isolated from mammalian cells.

8. The composition of claim **3**, wherein the growth factor is prepared synthetically.

9. The composition of claim **3**, wherein the growth factor is prepared using recombinant DNA technologies.

10. The composition of claim **1**, wherein the biologically active agent is a cell.

11. The composition of claim **10**, wherein the cell is an epithelial cell.

12. The composition of claim **10**, wherein the cell is a neurectodermal cell.

13. The composition of claim **10**, wherein the cell is a mesenchymal stem cell.

14. The composition of claim **13**, wherein the mesenchymal stem cell is selected from the group consisting of osteoblasts, chondrocytes and fibroblasts.

15. The composition of claim **10**, wherein the cell is either allogenic or xenogenic.

16. The composition of claim **1**, wherein the biologically active agent is a gene.

17. The composition of claim **16**, wherein the gene is either allogenic or xenogenic.

18. A crosslinked synthetic polymer matrix prepared from a multi-nucleophilic polyalkylene oxide having two or more nucleophilic groups, a multi-electrophilic polyalkylene oxide having two or more electrophilic groups; and further comprising a biologically active agent incorporated therein.

19. The matrix of claim **18**, wherein the biologically active agent is incorporated via covalent binding.

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